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An Examination of Dental Trainee and Practitioner Knowledge in Eating Disorder Identification and Communication

Abstract

Dental practitioners are uniquely positioned to be the first healthcare providers to identify the physical signs of an eating disorder. As such, they play an important role in early intervention and collaboration of appropriate care for patients with eating disorders or subthreshold conditions. Current research indicates that the majority of dental practitioners have low levels of knowledge of the physical signs of an eating disorder and are usually not engaging in eating disorder specific secondary prevention practices. The present study extended these findings and examined skills essential to secondary prevention practices; namely, the ability to identify the physical signs of an eating disorder and the ability to communicate findings to the patient or another healthcare professional. Using an online survey, students and practitioners in dentistry and dental hygiene professions from the Pacific Northwest completed demographic information and assessments of their knowledge and communication skills regarding eating disorders. Results confirmed previous findings that the majority of dental practitioners hold low levels of knowledge of the oral and physical manifestations of eating disorders. Findings also indicated that students similarly have low levels of knowledge in this area. Additionally, all participants who had received training in the communication skills to use with patients exhibiting signs of an eating disorder reported significantly higher levels of knowledge, and of those, dental hygiene students and dentists reported significantly higher communication self-efficacy. Together, the results support the need for improved education and training in the secondary prevention of eating disorders in the dental setting.

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Thesis

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AN EXAMINATION OF DENTAL TRAINEE AND PRACTITIONER KNOWLEDGE IN
EATING DISORDER IDENTIFICATION AND COMMUNICATION

A THESIS

SUBMITTED TO THE FACULTY

OF

SCHOOL OF PROFESSIONAL PSYCHOLOGY

PACIFIC UNIVERSITY

HILLSBORO, OREGON

BY

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IN PARTIAL FULFILLMENT OF THE

REQUIREMENTS FOR THE DEGREE

OF

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APPROVED:
Shawn E. Davis, Ph.D.
Committee Chair

DENTAL PRACTITIONER KNOWLEDGE OF EATING DISORDERS

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DENTAL PRACTITIONER KNOWLEDGE OF EATING DISORDERS

Abstract

Dental practitioners are uniquely positioned to be the first healthcare providers to identify the physical signs of an eating disorder. As such, they play an important role in early intervention and collaboration of appropriate care for patients with eating disorders or subthreshold conditions. Current research indicates that the majority of dental practitioners have low levels of knowledge of the physical signs of an eating disorder and are usually not engaging in eating disorder specific secondary prevention practices. The present study extended these findings and examined skills essential to secondary prevention practices; namely, the ability to identify the physical signs of an eating disorder and the ability to communicate findings to the patient or another healthcare professional. Using an online survey, students and practitioners in dentistry and dental hygiene professions from the Pacific Northwest completed demographic information and assessments of their knowledge and communication skills regarding eating disorders. Results confirmed previous findings that the majority of dental practitioners hold low levels of knowledge of the oral and physical manifestations of eating disorders. Findings also indicated that students similarly have low levels of knowledge in this area. Additionally, all participants who had received training in the communication skills to use with patients exhibiting signs of an eating disorder reported significantly higher levels of knowledge, and of those, dental hygiene students and dentists reported significantly higher communication self-efficacy. Together, the results support the need for improved education and training in the secondary prevention of eating disorders in the dental setting.

DENTAL PRACTITIONER KNOWLEDGE OF EATING DISORDERS

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Introduction

Eating disorders are serious and potentially life-threatening illnesses that have increased considerably in prevalence over the past four decades, currently affecting an estimated 10 million people in the United States alone (National Eating Disorders Association [NEDA], 2005; Yager et al., 2005). Eating disorders are treatable conditions and early intervention significantly improves recovery outcome (Hazelton & Faine, 1996). Given that dental practitioners are often the first healthcare providers to identify the physical signs of eating disorders and subthreshold conditions (Bishop, Briggs, & Schmidt, 1994), they hold an important role in early identification and collaboration of appropriate care. Unfortunately, recent research suggests that dentists and dental hygienists receive limited instruction in school on the secondary prevention of eating disorders, which includes early detection, patient-specific oral treatment, and referral to care (DeBate, Shuman, & Tedesco, 2007). Additionally, the majority of practicing dentists and dental hygienists are not engaging in eating disorder specific secondary prevention practices (DeBate, Plichta, Tedesco, & Kerschbaum, 2006; DiGioacchino, Keenan, & Sargent, 2000). The present research represents an exploration into the current knowledge and communication skills among practicing and training dental practitioners in the hopes of identifying strategies to increase dental provider engagement in the secondary prevention of eating disorders.

Literature Review

Eating Disorders

Eating disorders are defined as serious illnesses that involve extreme disturbances in behaviors around food and weight, and are life-threatening (American Psychiatric Association [APA], 2000). The three types of eating disorders as defined by the *Diagnostic and Statistical Manual of Mental Disorders*, 4th ed. (APA, 2000) are Anorexia Nervosa (AN), Bulimia Nervosa

(BN), and Eating Disorder Not Otherwise Specified (EDNOS). Anorexia Nervosa is defined by a refusal to maintain one's weight at a minimally normal body weight through food restriction coupled with an overwhelming concern regarding one's shape and weight. Bulimia Nervosa is characterized by a pattern of episodes of eating large quantities of food in a small period of time (binge) followed by compensatory behaviors in an attempt to prevent weight gain (purge). The compensatory behaviors in BN include self-induced vomiting, misuse of laxatives, diuretics or other medications, fasting, and excessive exercise. Eating Disorder Not Otherwise Specified is the most common eating disorder seen in clinical settings, and includes Binge Eating Disorder (BED) and other combinations of disordered eating behaviors that do not meet the strict diagnostic criteria for AN or BN. A high morbidity and mortality is associated with all of the eating disorders, with mortality rates estimated at 4.0% for AN, 3.9% for BN, and 5.2% for EDNOS (Crow et al., 2009). Other studies have demonstrated that AN has the highest mortality rate of all psychiatric conditions (Sullivan, 1995). Fortunately, early diagnosis and treatment significantly improve recovery outcomes for individuals with eating disorders (Hazelton & Faine, 1996).

Oral Manifestations of Eating Disorders

Dental providers are uniquely poised to provide early identification and intervention of eating disorders since the initial signs and symptoms associated with an eating disorder are often found in, or around, the mouth (Christenen, 2002; Hague, 2010; Roberts & Tylanda, 1989). In recent years, there has been an increasing number of studies published documenting the oral manifestations of eating disorders (DeBate, Plichta, Tedesco, & Kerschbaum, 2006; Russo, Campisi, Fede, Liberto, Panzarella, & Muzio, 2008). The types of eating disordered behaviors, as well as duration and intensity of behaviors, produce different oral manifestations. Self-

induced vomiting, a behavior often characteristic of BN, is known to be associated with a specific pattern of tooth erosion (perimyolysis), as well as tooth sensitivity, dry mouth (xerostomia), and restorations with a raised appearance due to loss of surrounding tooth structure (Little, 2002). Though physicians often do not identify BN in the medical office (Johnson, Spitzer, & Williams, 2001), these oral signs can be significant indicators of concern to the trained dental provider. Nutritional deficiencies and the consequent metabolic impairment that is most common in AN, but can also be seen with BN or in subthreshold conditions, has been found to be associated with dry mouth (xerostomia) and atrophic mucosa. Other potential oral signs of eating disorders may include increased caries, periodontal disease, cheilosis, enlarged parotid glands, sore throat, and enlarged salivary glands. At present, the literature is inconsistent with regard to whether dental caries and periodontal disease are manifestations of disordered eating behaviors (Debate, Tedesco, & Kerschbaum, 2005). Importantly, some of these oral manifestations may occur very early in the illness onset, underlying the importance of the dental providers' role in early intervention (Russo et al., 2008).

Secondary Prevention

Eating disorder prevention efforts can take place during different stages of the illness progression. Primary prevention describes efforts to prevent the development of an eating disorder altogether. Once an eating disorder has developed, however, early detection and interventions designed to modify the extent or severity of the problem become more critical to treatment success. Secondary prevention encompasses all efforts at this stage to identify and reduce the overall duration of the illness and its deleterious effects (Mann, Nolen-Hoeksema, Huang, & Burgard, 1997). A third type of prevention is tertiary prevention. After continued

eating disorder progression, tertiary prevention efforts may be used to minimize the disability associated with the condition and work towards rehabilitation.

Because dental providers have unique access to the early physical manifestations of disordered eating behaviors that exhibit in the mouth, they can play a vital role in the secondary prevention of eating disorders (DiGiacchino, Keenan, & Sargent, 2000). This important role is emphasized by recent findings that the majority of dentists and dental hygienists have patients in their practice that they suspect or know have an eating disorder (Burgard et al., 2003). In publications by DeBate and colleagues (e.g., DeBate, Plichta, Tedesco, & Kerschbaum, 2006; DeBate, Tedesco, & Kerschbaum, 2005), five secondary prevention behaviors specific to the dental provider have been outlined. First, and perhaps most importantly, oral health care providers hold the role of assessing for the oral manifestations of disordered eating or eating disorders. This assessment is instrumental in identifying an eating disorder in its early stages and involves communication of their findings to the patient. The assessment is ongoing and ideally occurs twice per year. After the identification and communication of findings to the patient, four remaining secondary prevention practices are important in modifying the extent and severity of the illness. These include providing specific home dental care instructions, arranging more frequent recall appointments for the patient with a suspected or confirmed eating disorder, referring the patient to a primary care physician or other health care provider with eating disorder expertise, and communicating with the patients' health care provider, or providers, in order to deliver coordinated care in the treatment of the eating disorder.

Eating Disorders Training in Dental and Dental Hygiene Program Curricula

Despite a growing recognition of the important role of dental practitioners in the secondary prevention of eating disorders, the cumulative time devoted to training in the

identification of eating disorders and secondary prevention practices is limited. An analysis of the curricula of dental and dental hygiene programs across the United States revealed that most programs do include eating disorders in their curricula (DeBate, Shuman, & Tedesco, 2007). Specifically, 71% of dental programs and 96% of dental hygiene programs included training in the general characteristics of AN and BN. Of these programs, however, approximately only 17 to 35 cumulative minutes were devoted to the topics of AN, BN, and the oral manifestations of eating disorders. Further, fewer programs included training in communication skills with patients showing oral signs of disordered eating, with only 58% of dental programs and 56% of dental hygiene programs providing training in this area. The authors of this study concluded that dental practitioners may not be adequately trained to identify, communicate, and provide preventative and restorative care to patients with suspected eating disorders.

Dental Practitioner Knowledge and Engagement in Secondary Prevention

Though the role of the oral health care provider in the secondary prevention of eating disorders is crucial, initial research examining the knowledge of dentists and dental hygienists indicates that many practitioners are not fully aware of the oral manifestations of eating disorders or their role in providing preventative and restorative care. DiGioacchino, Keenan, and Sargent (2000) conducted the first pilot study to investigate dentist and dental hygienist knowledge of the oral implications of eating disorders and how prepared the providers were to engage in various secondary and tertiary prevention efforts. Their results indicated that most dentists and dental hygienists were either “not sure” or were unable to identify the possible oral manifestations of disordered eating. Similar research has consistently found low levels of knowledge of the oral manifestations of eating disorders among dentists and dental hygienists (DeBate, Tedesco, & Kerschbaum, 2005; Harwood & Newton, 1995).

A second component of DiGioacchino, Keenan, and Sargent's pilot study (2000) examined dentist and dental hygienist readiness to engage in eating disorder specific secondary prevention practices. Using the transtheoretical model as a framework to investigate where dental practitioners fell along a continuum of "no action" to "consistent action" in providing care for a patient with a suspected eating disorder, the authors found that the majority of dental practitioners are not engaging in secondary prevention strategies. Specifically, practitioners indicated that they were either in the "no action" (precontemplative stage) or "thinking about action" (contemplative stage) stages regarding readiness to assess for disordered eating (72.2% dentists; 63.1% dental hygienists), provide patient-specific home-care instruction (66.7% dentists; 68.5% dental hygienists), arrange a more frequent recall program (77.8% dentists; 78.6% dental hygienists), make a referral for treatment (88.8% dentists; 94.8% dental hygienists), and communicate with the patients' physician (83.4% dentists; 94.7% dental hygienists).

To further understand the low levels of dental practitioner involvement in the secondary prevention of eating disorders, DeBate, Plichta, Tedesco, and Kerschbaum (2006) examined factors that influenced the behavioral adoption of these practices among dental hygienists. They found perceived self-efficacy in successfully implementing secondary prevention practices was a consistent modifying factor that increased the likelihood of adopting all five secondary prevention practices. In other words, the dental hygienists who indicated that they were confident in their ability to identify the oral manifestations of an eating disorder, communicate their concerns as well as preventative and restorative care instructions, and refer the patient to an eating disorder specialist, were an estimated 1.6 to 2.4 times more likely to engage in secondary prevention practices. An additional moderator was knowledge of the oral manifestations of

eating disorders. The dental hygienists who were well versed in the oral indicators of eating disorders were nearly two times more likely than their less knowledgeable colleagues to provide eating disorder specific home dental care instructions and arrange for more frequent recall appointments. Lastly, a higher perceived severity of eating disorders was related to an increased likelihood of engaging in all the secondary prevention practices except providing specific home-care instruction.

Other researchers who have looked at factors that influence the adoption of eating disorder specific secondary prevention practices among primary care physicians have demonstrated similar findings. For example, Currin, Waller, and Schmidt (2009) investigated the knowledge of and attitudes towards eating disorders among physicians, and found that greater knowledge of eating disorders was associated an increased likelihood of the secondary prevention measure of follow-up appointments (Currin, Waller, & Schmidt, 2009).

In a focus group of 21 practicing dentists, several supports and barriers to engaging in eating disorder specific secondary prevention practices were identified (DeBate & Tedesco, 2006). The factors that supported engagement included the belief that dental practitioners held an ethical obligation to discuss oral findings with their patients. The dentists in this study also stated that dental hygienists were an important support professional because of the amount of time they spend with the patient, which helps them in developing rapport and also provides the opportunity for a thorough examination of the mouth. The barriers to engaging in secondary prevention practices included fears of offending the patient or misdiagnosing, uneasiness with patient approach, lack of training in patient approach, lack of practice protocol, lack of interdisciplinary communication, professional dissonance regarding role in secondary prevention, and lack of established policy.

Overall, it can be understood that although dentists do believe they are ethically obligated to address eating disordered concerns with their patients, they hold low levels of knowledge of the oral manifestations of eating disorders and are usually not incorporating secondary prevention practices with their patients. Additionally, increased knowledge, higher perceived self-efficacy in performing secondary prevention practices, and a higher perceived severity of eating disorders are factors identified as likely to improve the adoption of secondary prevention practices among oral health care providers. Taken together, these findings support the need for further training in eating disorders and related secondary prevention practices.

The Present Study

The present study was designed to add to our understanding of the current level of knowledge that dental practitioners have regarding eating disorder symptomatology and how to communicate their eating disorder specific findings to patients and other professionals. The ability to identify oral manifestation of eating disorders and communicate findings represents the first, and arguably, most important factor in the secondary prevention of eating disorders in the dental setting. To aide understanding of the development of these competencies among students and professionals in the dental profession, educational factors and personal experiences with eating disorders will also be examined. In that it is an exploratory investigation, no specific hypotheses are being offered. It is hoped that this research will help identify areas of training that can enhance an oral health care providers' ability and willingness to engage in the secondary prevention of eating disorders.

Method

Participants

In total, 277 individuals participated in the present study. Participants included male and female students currently enrolled in dental school (21 male and 17 female) or dental hygiene school (2 male and 41 female), practicing dentists (58 male and 35 female) or dental hygienists (2 male and 83 female), as well as not currently practicing or retired dentists or dental hygienists (12 male and 6 female) in the Pacific Northwest.

Procedure

Study participants were recruited via e-mail notice at university and professional school locations within the Pacific Northwest, as well as among professional dental and dental hygiene organizations (e.g., Oregon Dental Association, Washington Dental Hygienists' Association, and the Oregon Dental Hygienists' Association). The e-mail recruitment message included a hyperlink that directed the individual to an online study website. Upon entering the study website, individuals were presented with and asked to read the document of informed consent (Appendix A). Participants then completed a demographics survey and were assessed for their perceived knowledge of eating disorder symptomology and their perceived communication skills with patients and other treating providers regarding eating disorder symptomology. They were also assessed for their actual knowledge of the physical and oral manifestations of eating disorders and their communication self-efficacy with patients and other providers. Upon completing the aforementioned measures, the participant was thanked for their time and contribution. A description of each measure is provided below.

Measures

Demographic Questionnaire (Appendix B). The demographic questionnaire included questions about age, gender, ethnicity, profession, education, and training. It also included items that assessed for personal experiences with eating or weight concerns and eating disorders, as well as whether or not they have known a friend or family member who has struggled with an eating disorder.

Perceived Level of Knowledge of Eating Disorders and Communication Skills (Appendix C). To assess for the perceived level of knowledge of eating disorders and communication skills, the researchers of the present study developed a five-item Likert-type measure. Participants were asked to indicate their level of knowledge on a scale from 1 (“I have no understanding of this concept”) to 7 (“I know everything there is to know about this concept”) regarding overall eating disorder knowledge, psychological signs and symptoms, oral signs and symptoms, communication skills with a patient exhibiting oral signs of an eating disorder, and communication skills with another professional regarding a patient exhibiting oral signs of an eating disorder.

Actual Knowledge of Eating Disorder Symptomatology (Appendix D). The knowledge of the physical and oral manifestations of eating disorders were measured using an 8-item and 9-item, respectively, knowledge assessment developed by Debate, Tedesco, and Kerschbaum (2005). On the assessment of knowledge of physical manifestations of eating disorders, participants were presented with eight different possible symptoms of eating disorders (e.g., normal weight, extremely thin, lanugo, arrhythmia, etc.), and asked first to indicate if they were signs of AN and next asked to indicate if they were signs of BN. The response options were “yes,” “no,” or “I don’t know.” Using the same cut-off criteria as Debate, Tedesco, and

Kerschbaum (2005), a sum of six or more correct answers indicated a high level of knowledge of the physical signs of eating disorders and a sum of five or fewer correct answers indicated a low level of knowledge. On the assessment of knowledge of oral manifestations of eating disorders, participants were presented with nine different possible oral symptoms of eating disorders (e.g., dentin hypersensitivity, dental carries, xerostomia, parotid enlargement, etc.). They were asked to indicate if the symptom was “a sign” of an eating disorder, “not a sign” of an eating disorder, or if they were “unsure.” This assessment measure did not break out responses into type of eating disorder (i.e., AN or BN). A sum of seven or more correct scores indicated a high level of knowledge of the oral manifestations of eating disorders and a sum of six or fewer correct scores indicated a low level of knowledge.

Communication Self-Efficacy Scale (Appendix E). The Communication Self-Efficacy Scale (CSES) is a 20-item survey designed to measure communication confidence (Raica, 2009). Participants were asked to indicate their level of confidence in communicating various aspects of health findings with patients and professionals using a 5-point Likert-type scale from 1 (not at all confident) to 5 (extremely confident).

Results

Sample Characteristics

In total, 294 individuals initiated participation in the present study. Of these individuals, 17 were removed from all analyses for failure to complete the assessment beyond demographics. For measures wherein a total or sum score is obtained, participant responses were removed on a measure-by-measure basis when any items were not completed within the measure (e.g., Actual knowledge of eating disorders symptomology and CSES). This resulted in 277 participants for whom partial study data was obtained of which 256 individuals completed all measures fully. In that the present investigation was focused on knowledge and communication of eating disorders symptomology among active students and currently practicing providers, information gained from retired and non-practicing professionals is not included in any further analyses. Table 1 presents the breakdown of study participants by ethnicity within group and Table 2 presents the breakdown of study participants by age within group.

Table 1

Study Sample Ethnicity Breakdown

	Dental Hygienist	Dentist	Dental Hygiene Student	Dental Student	TOTAL
African American or Black	0	1	3	0	4
Asian or Pacific Islander	3	8	7	12	30
Latino or Hispanic	1	0	1	2	4
American Indian or Alaskan Native	1	0	0	0	1
White or of European Origin	79	83	31	22	215
Other	1	1	1	2	5
TOTAL	85	93	43	38	259

Table 2

Study Sample Age Breakdown

	Dental Hygienist	Dentist	Dental Hygiene Student	Dental Student
Average Age Male	53 (Range: 49-57)	46.82 (Range: 26-70)	32 (Range: 31-33)	28.53 (Range: 23-45)
Average Age Female	46.37 (Range: 23-70)	39.55 (Range: 25-59)	25.97 (Range: 19-41)	25.36 (Range: 21-31)

Personal Experience With Eating Concerns or an Eating Disorder

Study participants were asked about their individual experience with an eating disorder and their personal experience with a friend or family member with an eating disorder. Tables 3 and 4 present the breakdown of personal experience with an eating disorder by gender for each sample group.

Table 3

Personal Experience for Dental Practitioners

	Dental Hygienists		Dentists	
	Female (%)	Male (%)	Female (%)	Male (%)
Concern about eating/weight and taken measures to change diet or appearance	86.75	100.00	85.71	73.68
Struggled with an eating disorder (such as AN, BN, or BED)	15.66	0	20.00	5.17
Diagnosed by a health professional as having an eating disorder	1.20	0	2.94	1.72
Sought treatment for an eating disorder	1.20	0	2.86	1.72
Know someone (friend or family member) with an eating disorder (such as AN, BN, or BED)	50.60	50.00	51.42	39.66
Know a friend or family member who has sought treatment for an eating disorder	43.75	100.00	42.86	41.03

*Percentages are based on the number of responses to each question rather than the total number of participants. Participants were given the option of not responding.

Table 4

Personal Experience for Students

	Dental Hygiene Students		Dental Students	
	Female (%)	Male (%)	Female (%)	Male (%)
Concern about eating/weight and taken measures to change diet or appearance	87.80	0	70.59	80.95
Struggled with an eating disorder (such as AN, BN, or BED)	26.83	0	29.41	4.76
Diagnosed by a health professional as having an eating disorder	0	0	11.76	0
Sought treatment for an eating disorder	0	0	11.76	0
Know someone (friend or family member) with an eating disorder (such as AN, BN, or BED)	46.34	50.00	41.18	38.10
Know a friend or family member who has sought treatment for an eating disorder	28.13	100.00	30.77	43.75

*Percentages are based on the number of responses to each question rather than the total number of participants. Participants were given the option of not responding.

Student Training Related to Eating Disorders

Student participants were asked to provide information regarding aspects of their education that involves training in identification, communication, and treatment recommendations for patients with suspected eating disorders.

A total of 95.3% of dental hygiene students indicated that they have had instruction in the oral manifestations of eating disorders and reported that, on average, 96.71 minutes of training were provided. Among dental students, 86.8% indicated that they have had instruction in the oral manifestations of eating disorders and reported that, on average, 95.07 minutes of training were provided.

A total of 60.5% of dental hygiene students indicated that they have had instruction in how to communicate with a patient exhibiting an eating disorder and reported that, on average, 74.35 minutes of training were provided. Among dental students, 63.2% indicated that they have

had instruction in how to communicate with a patient exhibiting an eating disorder and reported that, on average, 30.79 minutes of training were provided.

A total of 65.1% of dental hygiene students indicated that they have had instruction in treatment recommendations for patients with eating disorders and reported that, on average, 54 minutes of training were provided. Among dental students, 39.5% indicated that they have had instruction in treatment recommendations for patients with eating disorders and reported that, on average, 48.21 minutes of training were provided.

Dental Practitioner Training Related to Eating Disorders

Practicing dental hygienists and dentists were asked if they have participated in any continuing education opportunities about the oral manifestations of eating disorders. Fifty-six-point-five percent of dental hygienists and 38.7% of dentists indicated that they had participated in such education opportunities. Additionally, both groups were asked if they have participated in any continuing education opportunities about communicating with patients exhibiting the physical signs of an eating disorder. Forty-two-point-four percent of dental hygienists and 21.5% of dentists indicated that they had this educational experience. Independent samples t-test analyses indicated a significant difference between dental hygienists and dentists for both types of continuing education opportunities evaluated ($t(176) = -2.40, p < .05$, and $t(176) = -3.05, p < .01$, respectively). Dental hygienists were found to attend more continuing education opportunities than dentists for both.

Dental hygienists and dentists were asked how often they communicate with other treatment providers about eating disorders. Seventeen-point-six percent of dental hygienists reported that they never communicate with other providers, 78.8% indicated that they rarely communicate with other providers, and 3.5% indicated that they often communicate with other

providers. Twenty-nine percent of dentists reported that they never communicate with other providers, 69.9% indicated that they rarely communicate with other providers, and 1.1% indicated that they often communicate with other providers.

Dental hygienists and dentists were asked how many patients in their practice that they have suspected of having an eating disorder. The most common response option selected by practitioners in the 1 to 5 patient range. Fifty-seven-point-six percent of dental hygienists indicated that they have suspected the presence of an eating disorder among 1 to 5 patients and only 4.7% reported never having seen a patient they suspected of having an eating disorder. Likewise, 49.5% of dentists indicated that they have suspected the presence of an eating disorder among 1 to 5 patients and only 5.4% reported never having seen a patient they suspected of having an eating disorder. Dental hygienists and dentists were also asked if they have ever had a patient seeking their assistance as a direct result of their eating disorder. On this measure, 15.3% of hygienists and 35.5% of dentists indicated they had seen at least one patient with this specific presentation.

Student and Practitioner Perceived Knowledge

Five questions were used to assess the perceived level of knowledge for each group using a scale ranging from 1 (no knowledge) to 7 (complete perceived knowledge). The resulting means for each question by group are presented in Table 5 below.

Table 5

Means of Perceived Knowledge by Group

	Dental Hygienist	Dentist	Dental Hygiene Student	Dental Student
Overall level of eating disorder knowledge	4.27	3.94	4.12	3.95
Knowledge of psychological signs and symptoms of an eating disorder	3.84	3.44	3.86	3.82
Knowledge of oral signs and symptoms of an eating disorder	5.01	4.78	4.86	4.58
Knowledge of communication skills to use with a patient exhibiting oral signs of an eating disorder	3.67	3.35	3.42	3.50
Knowledge of communication skills to use with another professional regarding a patient exhibiting oral signs of an eating disorder	4.22	3.82	3.79	4.00

Analyses revealed no significant differences between groups for any of the perceived knowledge questions.

Student and Practitioner Actual Knowledge

Actual knowledge of eating disorders was assessed using three scales developed by DeBate, Tedesco, and Kerschbaum (2005) that measure knowledge of the physical cues of both anorexia and bulimia, as well as knowledge of the oral indicators of eating disorders. Table 6 presents the percentages of dental hygienists, dentists, dental hygiene students, and dental students who correctly and incorrectly identified the physical cues of anorexia and bulimia. Table 7 presents the percentages of each group who correctly or incorrectly identified the oral manifestations of eating disorders.

Table 6

Knowledge of the Physical Cues of Anorexia and Bulimia by Group

Variable	Group	Anorexia			Bulimia		
		Yes	No	Unsure	Yes	No	Unsure
Normal weight ^{ab}	Dental Hygienists	27.2	63.0	9.9	76.3	16.3	7.5
	Dentists	19.8	74.4	5.8	71.3	19.5	9.2
	Dental Hygiene Students	14.3	76.2	9.5	86.0	7.0	7.0
	Dental Students	22.9	71.4	5.7	67.6	20.6	11.8
Obesity	Dental Hygienists	11.1	75.3	13.6	57.0	31.6	11.4
	Dentists	8.1	87.2	4.7	46.5	40.7	12.8
	Dental Hygiene Students	7.3	90.2	2.4	76.4	20.9	11.6
	Dental Students	17.1	74.3	8.6	50.0	41.2	8.8
Extremely thin ^a	Dental Hygienists	98.8	1.2	0	51.9	39.1	8.6
	Dentists	98.1	1.1	0	55.2	35.6	9.2
	Dental Hygiene Students	97.7	0	2.3	51.2	44.2	4.7
	Dental Students	94.3	2.9	2.9	60.0	34.3	5.7
Lanugo ^a	Dental Hygienists	30.9	2.5	66.7	12.3	14.8	72.8
	Dentists	23.3	4.7	72.1	6.0	15.5	78.6
	Dental Hygiene Students	48.8	4.7	46.5	16.3	34.9	48.8
	Dental Students	22.9	0	71.1	11.4	2.9	85.7
Arrhythmia ^{ab}	Dental Hygienists	81.3	3.8	15.0	45.7	9.9	44.4
	Dentists	76.7	4.7	18.6	46.0	13.8	40.2
	Dental Hygiene Students	79.1	7.0	14.0	32.6	23.3	44.2
	Dental Students	62.9	2.9	34.3	34.3	5.7	60.0
Cracked/dry nails ^{ab}	Dental Hygienists	85.2	2.5	12.3	48.1	14.8	37.0
	Dentists	77.9	1.2	20.9	40.2	12.6	47.1
	Dental Hygiene Students	83.7	2.3	14.0	41.9	20.9	37.2
	Dental Students	82.9	0	17.1	34.3	8.6	57.1
Loss of body hair ^a	Dental Hygienists	77.8	7.4	14.8	34.6	24.7	40.7
	Dentists	70.1	8.0	21.8	29.1	20.9	50.0
	Dental Hygiene Students	72.1	20.9	7.0	44.2	25.6	30.2
	Dental Students	80.0	2.9	17.1	34.3	5.7	60.0
Growth or lipoma on extremities ^b	Dental Hygienists	3.8	13.8	82.5	9.9	9.9	80.2
	Dentists	6.9	12.6	80.5	9.3	7.0	83.7
	Dental Hygiene Students	14.0	16.3	69.8	25.6	7.0	67.4
	Dental Students	8.6	8.6	82.9	14.3	2.9	82.9

Note: Correct selections are presented in bold.

^a = an indicator of anorexia^b = an indicator of bulimia

Table 7

Knowledge of Oral Manifestations of Eating Disorders by Group

Oral Manifestation	Group	A sign (%)	Not a sign (%)	Unsure (%)
Dentin Hypersensitivity	Dental Hygienists	92.4	1.3	6.3
	Dentists	89.5	2.3	8.1
	Dental Hygiene Students	83.3	2.4	14.3
	Dental Students	76.5	2.9	20.6
Dental caries	Dental Hygienists	92.4	5.1	2.5
	Dentists	81.0	11.9	7.1
	Dental Hygiene Students	86.0	7.0	7.0
	Dental Students	61.8	29.4	8.8
Xerostomia	Dental Hygienists	71.8	10.3	17.9
	Dentists	58.1	14.0	27.9
	Dental Hygiene Students	76.7	14.0	9.3
	Dental Students	30.3	18.2	51.5
Parotid enlargement	Dental Hygienists	50.6	6.3	43.0
	Dentists	48.2	2.4	49.4
	Dental Hygiene Students	67.4	9.3	23.3
	Dental Students	20.6	11.8	67.6
Parotid dysfunction	Dental Hygienists	45.6	7.6	46.8
	Dentists	49.4	3.5	47.1
	Dental Hygiene Students	65.1	11.6	23.3
	Dental Students	17.6	14.7	67.6
Enamel erosion of lingual and occlusal surfaces of maxillary posterior teeth	Dental Hygienists	88.6	6.3	5.1
	Dentists	100.0	0	0
	Dental Hygiene Students	88.4	7.0	4.7
	Dental Students	94.1	0	5.9
Enamel erosion of lingual surface of mandibular anterior teeth	Dental Hygienists	66.1	21.8	11.5
	Dentists	67.4	25.6	7.0
	Dental Hygiene Students	88.4	9.3	2.3
	Dental Students	82.4	11.8	5.9
Periodontal disease	Dental Hygienists	40.5	31.6	27.8
	Dentists	36.0	31.4	32.6
	Dental Hygiene Students	51.2	23.3	25.6
	Dental Students	32.4	23.5	44.1
Gingival inflammation	Dental Hygienists	68.4	11.4	20.3
	Dentists	79.1	9.3	11.6
	Dental Hygiene Students	67.4	20.9	11.6
	Dental Students	50.0	17.6	32.4

Note: Correct selections are presented in bold. "Unsure" represents the correct answer for response items in which the literature is inconsistent as to whether or not they are oral manifestations of disordered eating behaviors (DeBate, Tedesco, & Kerschbaum, 2005).

Using the scoring criteria developed by DeBate, Tedesco, and Kerschbaum (2005), participant scores on the three measures were calculated and then classified as high or low levels of knowledge. Table 8 presents the percentages of dental hygienists, dentists, dental hygiene students, and dental students who fell into low or high levels of knowledge on the oral and physical cues of eating disorders.

A one-way ANOVA was conducted to determine if there were significant differences between groups in their actual knowledge of the physical symptoms of anorexia and bulimia, as well as the oral manifestations of eating disorders. While no significant differences were found between groups in knowledge of the physical indicators of anorexia or bulimia, a significant difference was found in level of knowledge of oral manifestations of eating disorders ($F(5, 251) = 4.20, p < .01$). Specifically, dental students were found to indicate lower levels of actual knowledge than each of the other groups.

Table 8

Differences in Knowledge of the Physical and Oral Indicators of Eating Disorders by Group

	Practitioner	Knowledge Scores	
		Low (%)	High (%)
Knowledge of physical cues of anorexia nervosa	Dental Hygienists	65.4	34.6
	Dentists	72.4	27.6
	Dental Hygiene Students	69.8	30.2
	Dental Students	85.7	14.3
Knowledge of physical cues of bulimia nervosa	Dental Hygienists	96.3	3.7
	Dentists	93.1	6.9
	Dental Hygiene Students	97.7	2.3
	Dental Students	100.0	0
Knowledge of oral manifestations an eating disorder	Dental Hygienists	78.5	21.5
	Dentists	74.4	25.6
	Dental Hygiene Students	67.4	32.6
	Dental Students	94.1	5.9

Note. Sum scores of knowledge of physical cues of anorexia and bulimia range from 0-8; scores between 0-5 indicate low knowledge and scores between 6-8 indicate high knowledge. Sum scores of knowledge of oral manifestations of eating disorders range from 0-9; scores between 0-6 indicate low knowledge and scores between 7-9 indicate high knowledge.

Communication

Perceived knowledge of how to communication with both patients and professionals as well as communication self-efficacy with patients and professionals were assessed for all four groups of study participants.

For dental hygiene students, a significant difference was found in communication self-efficacy between students who have received instruction in how to communicate with a patient suspected of having an eating disorder ($M = 82.91$) and those who have not ($M = 70.50$) ($t(37) = 2.68, p < .05$). Communication self-efficacy was also found to be positively correlated with their reported level of knowledge of the communication skills to use with a patient exhibiting oral signs of an eating disorder ($r(39) = .476, p < .01$) and those to use with another professional ($r(39) = .444, p < .01$). In regard to an individual's reported level of knowledge of the

communication skills to use with a patient, significant differences were found between individuals who have ($M = 4.31$) and have not ($M = 2.06$) received instruction on how to communicate with a patient suspected of having an eating disorder ($t(41) = 5.75, p < .001$). Likewise, significant differences were found between individuals who have ($M = 4.58$) and have not ($M = 2.59$) received the above instruction in their reported knowledge of the communication skills to use with another professional regarding a patient exhibiting oral signs of an eating disorder ($t(41) = 4.86, p < .001$). For dental students, significant differences were found between individuals who have received instruction ($M = 3.92$) and those who have not ($M = 2.79$) in their knowledge of how to communicate with a patient ($t(36) = 3.18, p < .01$). However, no significant differences were found between dental students who have received instruction and those who have not in either their communication self-efficacy ($t(26) = 1.14, ns$) or their level of knowledge of the communication skills to use with a professional ($t(36) = .80, ns$). As with dental hygiene students, communication self-efficacy was found to be positively correlated with dental students reported level of knowledge of the communication skills to use with a patient exhibiting oral signs of an eating disorder ($r(28) = .43, p < .05$) and those to use with another professional ($r(28) = .598, p < .01$).

Practicing dentists and dental hygienists were asked whether they have participated in any continuing education opportunities on communicating with patients with eating disorders. Significant differences were found between dental hygienists who have ($M = 4.00$) and those who have not participated ($M = 3.43$) in their reported knowledge of the communication skills to use with a patient exhibiting oral signs of an eating disorder ($t(83) = 2.18, p < .05$). Likewise, significant differences were found between those who participated in the aforementioned continuing education ($M = 4.56$) and those who did not participate ($M = 3.98$) in their

knowledge of the communication skills to use with another professional ($t(83) = 2.02, p < .05$). However, no significant differences were found between groups in their communication self-efficacy ($t(72) = .53, ns$). For practicing dentists, significant differences were found between those who have participated in the above continuing education opportunity ($M = 3.89$) and those who have not participated ($M = 3.22$) in their reported knowledge of the communication skills to use with a patient exhibiting oral signs of an eating disorder ($t(89) = 2.23, p < .05$). Unlike dental hygienists, significant differences were found between those who have ($M = 79.45$) and those who have not participated ($M = 70.14$) in the continuing education training above in their communication self-efficacy ($t(81) = 2.45, p < .05$). For practicing dentists, however, the groups were not found to significantly differ in their level of knowledge of communication skills to use with professionals regarding a patient exhibiting signs of an eating disorder ($t(90) = 1.68, ns$).

Discussion

Dental practitioners are uniquely poised to identify the early physical signs of an eating disorder, and as such, can play a key role in the early intervention and recovery process of eating disorders. To do so, dental practitioners need the knowledge to identify indicators of an eating disorder and the communication skills to express their findings and provide appropriate patient care and referral. The present study explored these secondary prevention factors among students and practitioners in dentistry and dental hygiene professions by assessing perceived and actual knowledge of eating disorders and their related communication skills with patients and professionals.

The results of this study support previous findings that the majority of dentists and dental hygienists have low levels of knowledge regarding the oral and physical manifestations of eating

disorders (DeBate, Tedesco, & Kerschbaum, 2005; DiGioacchino, Keenan, & Sargent, 2000).

This study also extended previous research to students in dental and dental hygiene programs and found that this group of participants likewise exhibited low levels of knowledge in these areas.

In addition to the assessment of knowledge, students and practitioners reported that they believed they had about average knowledge of eating disorders and their oral manifestations. Given the complex and serious nature of eating disorders, accurate knowledge of the oral and physical signs of eating disorders is essential to the secondary prevention of these conditions. More specifically, the results indicate that all groups performed the poorest on the assessment of knowledge of the physical cues of bulimia. Two items on this measure appeared to be particularly challenging to participants (lanugo and growth or lipoma on extremities) as indicated by unsure responses in the range of 67-83% for dental hygienists, dentists, and dental students.

Unlike the findings of DeBate, Tedesco, and Kerchbaum (2005) which found that dental hygienists scored significantly better than dentists on identifying the oral manifestations of eating disorders, no differences between these two professions was found in the present study.

However, it was found that dental students scored significantly lower than all other groups on knowledge of the oral manifestations of eating disorders. It is possible that the lack of significant differences between practicing professionals may be due, in part, to a lower sample size than that obtained by DeBate and colleagues.

In regards to education, the majority of students and practitioners indicated that they have received training in the oral manifestations of eating disorders and communication strategies with a patient exhibiting eating disorder signs. Among students, over 86-95% indicated they had received training specifically in the oral manifestations of eating disorders with an estimated average of more than an hour-and-a-half of class time devoted to this topic. Interestingly, reports

by students of time spent on this component of training exceed the estimated national average obtained by review of dental and dental hygiene program curricula, which estimate didactic instruction to be about 18 to 33 minutes (DeBate, Shuman, & Tedesco, 2007). Though fewer students indicated they have had instruction in how to communicate with a patient with an eating disorder, between 60-63% endorse obtaining this training. Dental hygiene students reported a higher estimated average amount of class time on this topic than dental students, which is consistent with DeBate, Shuman, and Tedesco's findings. However, whereas DeBate, Shuman, and Tedesco estimated an average of 10 to 18 minutes of clinical instruction on this aspect, students' report of class time within the present study was an average of 74 minutes for dental hygiene students and 31 minutes for dental students. Lastly, a majority of dental hygiene students reported obtaining instruction in treatment recommendations for patients with eating disorders, but less than half of dental students endorsed such training. Though there is no standard established for the amount of time that would support effective learning in the identification and intervention of eating disorders, the low levels of knowledge obtained by students and professionals in this study call for continued improvements in education.

Within the current investigation, it was found that about half of dental hygienists and less than half of dentists continue to receive ongoing training in eating disorders. Specifically, significantly more dental hygienists than dentists attend continuing education opportunities on the oral manifestations of eating disorders (57% of dental hygienists compared to 39% of dentists) and for communication strategies directed toward patients with eating disorders (42% of dental hygienists compared to 22% of dentists).

Although training in the communication strategies to use with patients is less common than training in the identification of oral manifestations for students and practitioners, there is

promising evidence that this form of training improves both perceived communication abilities and actual communication self-efficacy. Dental hygiene students and dentists who received this training reported significantly higher communication self-efficacy with patients and other professionals compared to their respective counterparts. Additionally, dental hygiene students, dental students, dental hygienists, and dentists who received this training reported significantly higher levels of knowledge in their communication skills to use with a patient exhibiting oral signs of an eating disorder than their counterparts who did not receive training. Lastly, all participants except dentists were found to have significantly higher reported knowledge of communication skills to use with another professional concerning a patient with eating disorder signs after receiving this training than those who did not. As eating disorders are a sensitive and often secretive topic among patients, appropriate training in communication skills is important in navigating effective intervention and treatment approaches.

Even though providers have demonstrated low levels of knowledge of oral and physical cues of eating disorders, and are not often engaging in continuing education in this area, the vast majority of dentists and dental hygienists indicate that they have seen at least one patient that they suspected or knew had an eating disorder. Furthermore, a moderate percentage of dental hygienists (15%) and dentists (36%) indicated that they have worked with at least one patient who sought their assistance as a direct result of their eating disorder.

Though information about personal experience with an eating disorder was obtained in order to explore possible relationships to eating disorder specific knowledge or communication skills in the dental setting, no significant relationships were found. As expected, the prevalence of eating or weight concern, eating disorders, and receiving eating disorder treatment for participants in this study was mostly consistent with the current literature (Hudson, Hiripi, Pope,

& Kessler, 2007). A high percentage of respondents (85.2% of females and 70.5% of males) indicated they have experienced concern about their own eating or weight and taken measures to change their diet or appearance. Additionally, approximately 19.8% of females and 4.2% of males identified as having an eating disorder at some point in their life, and only 2.2% of females and 1.1% of males indicated that they had sought treatment for an eating disorder. Similarly, in a recent national study (Hudson, Hiripi, Pope, & Kessler, 2007), only 43.2% of individuals with a lifetime prevalence of bulimia received mental health treatment for the illness, and 45.3% of individuals with a lifetime prevalence of anorexia received treatment in the medical sector for the illness. Given the role of dental practitioners in the early identification and intervention of eating disorders, continued research into the factors that support early treatment seeking behaviors can aide tailored approaches to communication and care with these patients.

The findings of this study provide support for the importance of improved education and training in the secondary prevention of eating disorders among dental practitioners. Specifically, the results suggest that a greater emphasis should be placed on the accurate instruction of the physical and oral cues of eating disorders so that students and practitioners can become effective in the identification of eating disorders in their early stages. It also highlights the importance of training or continuing education opportunities in communication with patients suspected of having an eating disorder.

Improving knowledge and communication skills among dental providers is an important step, but will only help with early intervention of eating disorders if practitioners use this knowledge in practice. Continued research is needed to understand the factors that contribute to or moderate the adoption of eating disorder specific secondary prevention practices. Potential areas of future investigation could include an examination of dentists and dental hygienists

attitudes in working with such patients and how this may influence their engagement in secondary prevention practices.

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Appendix A

Informed Consent**1. Study Title:**

Oral Health Care Providers Knowledge of Special Needs Populations and Secondary Prevention

2. Study Personnel

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3. Study Invitation, Purpose, Location, and Dates

You are invited to participate in a research study aimed at gaining greater understanding of oral health care providers' (i.e., dental and dental hygiene students and providers) knowledge, skills, and attitudes in working with the needs of special populations. The study is expected to begin March 2011, and to be completed by June 2011. This is an online study and all data collected will be housed at the School of Professional Psychology, Suite 286, within the College of Health Professions, Pacific University. The results of this study may help in enhancing educational opportunities regarding work with special populations.

4. Participant Characteristics and Exclusionary Criteria

You are eligible to participate in this study because you are a dental student, a dental hygiene student, or a practicing dentist or dental hygienist. To participate in this study, you must be at least 18 years of age and speak English fluently.

5. Study Materials and Procedures

In this online study, you will be asked to complete a brief demographic survey that will include your personal experience with a special population issue. You will have a choice to respond to these personal questions or indicate that you prefer not to answer. This will be followed by questionnaires about your knowledge, communication skills, and attitudes regarding working with a special needs population. Last, you will be presented with a brief survey about communication skills with this special needs population. The total duration of the study should be less than 20 minutes.

6. Risks, Risk Reduction Steps, and Clinical Alternatives

a. Unknown Risks: It is possible that participation in this study may expose you to currently unforeseeable risks.

b. Anticipated Risks and Strategies to Minimize/Avoid: Your participation in this project involves no foreseeable risks. The survey should not cause you any discomfort, but if discomfort occurs, you can stop your participation at any time. You do not have to answer any question or engage in any task that you do not wish to perform. If discomfort occurs, you may contact the faculty advisor and graduate student investigator at the information listed above. Please note that study data, informed consent, and contact email information will be kept separate and confidential.

c. Advantageous Clinical Alternatives: This study does not involve experimental clinical trial(s).

7. Adverse Event Handling and Reporting Plan

If you experience continued discomfort during the study procedure you should stop your participation immediately and contact both Shawn Davis, Ph.D. at (503) 352-7319 and the Pacific University Institutional Review Board at (503) 352-2112.

8. Direct Benefits and/or Payment to Participants

Though there are no direct benefits, through your participation in this study, you are providing researchers with valuable information into the current levels of understanding of a special needs population and related secondary prevention practices. It is hoped that through your participation, researchers and providers can develop enhanced training programs for oral health care providers in caring for the unique needs of special populations.

Additionally, you will be provided with an opportunity to choose from one of three nonprofit organizations to have \$1 donated to in appreciation for your participation.

9. Promise of Privacy

The records of this study will be kept private. Results from your participation will be available only to the researchers themselves. If a publication or other educational use results from this study and case reports are presented, all identifying material will be substantially modified so that your identity will be safeguarded. Your responses will remain strictly anonymous. If the results of this study are to be presented or published, we will not include any information that will make it possible to identify you as an individual.

10. Medical Care and Compensation In the Event of Accidental Injury

During your participation in this project it is important to understand that you are not a Pacific University clinic patient or client, nor will you be receiving medical care as a result of

your participation in this study. If you are injured during your participation in this study and it is not due to negligence by Pacific University, the researchers, or any organization associated with the research, you should not expect to receive compensation or medical care from Pacific University, the researchers, or any organization associated with the study.

11. Voluntary Nature of the Study

Your decision whether or not to participate will not affect your current or future relations with Pacific University. There are no costs to you for your participation other than the time involved in completing the surveys. If you choose not to participate, you are free to withdraw at any time; withdrawal will not result in penalty. Participation in this project is voluntary and the only other alternative to this project is non-participation. If you decide to participate, you are free to not answer any question or withdraw at any time without prejudice or negative consequences.

12. Contacts and Questions

The researcher(s) will be happy to answer any questions you may have at any time during the course of the study. Complete contact information for the researchers is noted earlier in this form. If you are not satisfied with the answers you receive, please call Pacific University's Institutional Review Board, at (503) 352 – 2112 to discuss your questions or concerns further. All concerns and questions will be kept in confidence.

13. Statement of Consent

I have read and understand the above. All my questions have been answered. I am 18 years of age or over and agree to participate in the study. I understand that I can copy and print this form to keep for my records.

Because this is an online survey, signatures cannot be obtained. By clicking "NEXT" I understand I will be taken to the study and that my continued participation in the survey denotes my consent. If I choose not to participate or to withdraw from participation, I can close the web page at anytime.

Appendix B

Demographic Questionnaire

Please respond to each of the following...

What is your age? _____

What is your gender? Male: _____ Female: _____

Which group best describes your ethnicity?

- ☐ African American or Black
- ☐ Asian or Pacific Islander
- ☐ Latino or Hispanic
- ☐ American Indian or Alaskan Native
- ☐ White or of European Origin
- ☐ Other (write in): _____

Are you a...

- ☐ Dental hygiene student
- ☐ Dental student
- ☐ Dental hygienist
- ☐ Dentist
- ☐ Not currently practicing dentist or dental hygienist
- ☐ Retired dentist or dental hygienist
- ☐ Other

If you selected other to the previous question, please explain:

The following questions inquire about any experiences you have had with an eating disorder, be it personal experience or that of a loved one. Please keep in mind that response are completely anonymous and cannot be traced to you.

Has there been a time in your life when you've been concerned about your eating or weight and taken measures to change your diet or appearance?

- ☐ Yes
- ☐ No
- ☐ I prefer not to answer

Have you ever struggled with an eating disorder, such as anorexia, bulimia, or binge eating disorder?

- ☐ Yes
- ☐ No
- ☐ I prefer not to answer

Have you been diagnosed by a health professional as having an eating disorder?

- ☐ Yes
- ☐ No
- ☐ I prefer not to answer

Have you ever sought treatment for an eating disorder?

- ☐ Yes
- ☐ No
- ☐ I prefer not to answer

Do you know someone (friend or family member) who has previously or is currently struggling with an eating disorder, such as anorexia, bulimia, or binge eating disorder?

- ☐ Yes
- ☐ No
- ☐ I prefer not to answer

If yes, has your friend or family member ever received treatment for their eating disorder?

- ☐ Yes
- ☐ No
- ☐ I prefer not to answer

Depending on the participants answer to the fourth question about being a student or provider in dentistry or dental hygiene, the remainder of the demographic questions will tailored to their profession.

Students:

How long have you been enrolled in your program (closest approximation)?

- ☐ ½ year
- ☐ 1 year
- ☐ 1 ½ years
- ☐ 2 years
- ☐ 2 ½ years
- ☐ 3 years
- ☐ 3 ½ years
- ☐ 4 years
- ☐ 4 ½ years
- ☐ 5 or more years

How much more schooling do you have until you receive your degree?

- ☐ ½ year
- ☐ 1 year
- ☐ 1 ½ years
- ☐ 2 years
- ☐ 2 ½ years
- ☐ 3 years
- ☐ 3 ½ years
- ☐ 4 years
- ☐ 4 ½ years
- ☐ 5 or more years

Have you had instruction in the oral manifestations of eating disorders? Yes: _____ No: _____

If yes, approximately how much class instruction time was devoted to this topic? Please indicate a specified amount of minutes.

Have you had instruction in how to communicate with a patient suspected of having an eating disorder?

- ☐ Yes
- ☐ No

If yes, approximately how much class instruction time was devoted to this topic? Please indicate a specified amount of hours and minutes.

Have you received instruction in what treatment recommendations to provide to a patient with a known or suspected eating disorder?

- ☐ Yes
- ☐ No

If yes, approximately how much class instruction time was devoted to this topic? Please indicate a specified amount of minutes.

Practicing providers:

How many years have you been working as a dentist/dental hygienist?

Do you participate in continuing education opportunities?

- ☐ Yes
- ☐ No

If yes, what types of continuing education do you participate in?

- ☐ Local conferences/trainings
- ☐ National conferences/trainings
- ☐ Online courses/trainings
- ☐ Other

If yes, have you participated in any continuing education opportunities about the oral manifestations of eating disorders?

☐ Yes

☐ No

If yes, have you participated in any continuing education opportunities about communicating with patients with eating disorders?

☐ Yes

☐ No

How often do you communicate with other treatment providers?

☐ Never

☐ Rarely

☐ Often

How many patients in your training/practice have you suspected had an eating disorder?

☐ 0

☐ 1-5

☐ 6-10

☐ 11-20

☐ 21-30

☐ 31-40

☐ 41-50

☐ More than 50

Have you ever had a patient who was seeking your assistance as a direct result of their eating disorder?

☐ Yes

☐ No

Previously practicing providers:

How many years did you work as a dentist/dental hygienist?

Did you participate in continuing education opportunities?

☐ Yes

☐ No

If yes, what types of continuing education did you participate in?

☐ Local conferences/trainings

☐ National conferences/trainings

☐ Online courses/trainings

☐ Other

If yes, did you participate in any continuing education opportunities about the oral manifestations of eating disorders?

☐ Yes

☐ No

If yes, did you participate in any continuing education opportunities about communicating with patients with eating disorders?

☐ Yes

☐ No

How often did you communicate with other treatment providers?

☐ Never

☐ Rarely

☐ Often

How many patients in your training/practice did you suspect had an eating disorder?

☐ 0

☐ 1-5

☐ 6-10

☐ 11-20

☐ 21-30

☐ 31-40

☐ 41-50

☐ More than 50

Did you ever have a patient who was seeking your assistance as a direct result of their eating disorder?

☐ Yes

☐ No

Appendix C

Perceived Level of Knowledge of Eating Disorders and Communication Skills

Please indicate your level of knowledge for each of the following questions according to the 1 to 7 scale described below:

1 = I have no (zero) understanding of this concept

7 = I know everything there is to know about this concept

1. What is your overall level of eating disorder knowledge?
2. What is your level of knowledge of the psychological signs and symptoms of an eating disorder?
3. What is your level of knowledge of the oral signs and symptoms of an eating disorder?
4. What is your level of knowledge of the communication skills to use with a patient exhibiting oral signs of an eating disorder?
5. What is your level of knowledge of the communication skills to use with another professional regarding a patient exhibiting oral signs of an eating disorder?

Please indicate if you believe the following oral symptoms are either signs of an eating disorder, not signs of an eating disorder, or if you are unsure.

	Not a sign	Unsure	A sign
Dentin hypersensitivity	_____	_____	_____
Dental caries	_____	_____	_____
Xerostomia	_____	_____	_____
Parotid enlargement	_____	_____	_____
Parotid dysfunction	_____	_____	_____
Enamel erosion of lingual and occlusal surfaces of maxillary posterior teeth	_____	_____	_____
Enamel erosion of lingual surface of mandibular anterior teeth	_____	_____	_____
Periodontal disease	_____	_____	_____
Gingival inflammation	_____	_____	_____

Appendix E

Communication Self-Efficacy Scale (CSES)

Indicate your level of agreement with each question using the following scale:

Not at all		Somewhat		Extremely
1	2	3	4	5

How confident are you that you could:

1. Communicate your patient assessment findings to a colleague (or other professional) in a concise manner.
2. Communicate the patient's current status (for example, the examination) in a direct manner.
3. Present yourself as an integral part of a health care team when presenting patient information.
4. Communicate your clinical findings to a colleague (or other professional) in an organized, succinct manner.
5. Routinely provide patient examination findings to a colleague (or other professional) in a concise manner before making recommendations.
6. State your concerns regarding the patient in an order of priority.
7. Suggest or discuss with the patient an appropriate intervention in a direct manner.
8. Provide valuable input regarding patient care issues in an organized manner.
9. Explain the current plan of care for your patient to a colleague (or other professional) that doesn't know the patient.
10. Suggest that a colleague (or other professional) come in to see the patient based on your examination findings.
11. Express any concerns to a colleague (or other professional) regarding your patient situation even when faced with rude or uncooperative behavior.

12. Provide an organized description of a patient situation for a colleague (or other professional) that does not know the patient.
13. Insist on a course of action in a non-threatening manner even when a colleague (or other professional) is uncooperative.
14. Provide valuable input regarding patient care issues in an organized manner.
15. State without hesitation the patient's current health situation.
16. Directly state your concerns to a colleague (or other professional) regarding the patient.
17. Routinely convey patient concerns to a colleague (or other professional) in an organized, succinct manner.
18. Suggest changes in treatment based on your knowledge of the patient care situation.
19. Communicate in an assertive manner.
20. Communicate in an organized / systematic manner.